REMARKS/ARGUMENTS

The present amendment and response is filed in response to the Office Action mailed April 11, 2006. In the present amendment, claims 2-4, 32, 33, 41, 62 and 71 have been cancelled without prejudice, claims 77-85 are newly submitted, and claims 1, 5, 7, 12-15, 20-22, 27, 30, 31, 34, 36, 42-46, 51, 52, 55, 57, 60, 63, 64, 69, 72 and 73 have been amended

Claim Rejections – 35 USC § § 102 & 103,

In the outstanding Office Action:

1. Claims 1, 21, 30, 41-43 and 51 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Lyon (US Patent No. 5,502,663);

2. Claims 2 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (US Patent No. 5,502,663) in view of Kynor et al. (US Patent No. 5,603,321);

3. Claims 3, 4, 32 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (US Patent No. 5,502,663) in view of Arand et al. (US Patent No. 5,318,036);

4. Claims 7 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (US Patent No. 5,502,663) in view of Levine (US Patent No. 5,579,243);

5. Claims 10 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (US Patent No. 5,502,663) in view of Levine (US Patent No. 5,579,243) and further in view of Kouri et al. (US Patent No. 6,847,737); and

6. Claims 60, 61, 69 and 70 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyon (US Patent No. 5,502,663) in view of Corless et al. (US Patent No. 6,988,116).

In order to overcome the above rejections of the independent claims have been amended to read as follows:

1. *A method of filtering an EMG input signal contaminated by a disturbance signal, the filtering method comprising:*

modeling the disturbance signal as polynomials of lower orders; and

removing the disturbance signal by removing the polynomials of lower orders from the contaminated EMG input signal to thereby obtain an EMG input signal substantially free from the disturbance signal.

21. *A device for filtering an EMG input signal contaminated by a disturbance signal, comprising:*

means for modeling the disturbance signal as polynomials of lower orders; and

means for removing the disturbance signal from the contaminated input signal, wherein the disturbance signal removing means comprises means for removing the polynomials of lower orders from the input signal to thereby obtain an EMG input signal substantially free from the disturbance signal.

30. *A method of filtering an EMG input signal contaminated by a disturbance signal, the filtering method comprising:*

modeling the EMG input signal by polynomials of higher orders; and

outputting the polynomials of higher orders as an estimate of the EMG input signal substantially free from the disturbance signal.

51. *A device for filtering an EMG input signal contaminated by a disturbance signal, comprising:*

means for modeling the EMG input signal as polynomials of higher orders; and

means for outputting the polynomials of higher orders as an estimate of the input signal substantially free from the disturbance signal.

The subject matter of amended independent claims 1, 21, 30 and 51 is supported by the description. More specifically, the subject matter of amended independent claims 1 and 21 is disclosed in page 10, lines 27-32 and in page 19, lines 11-14. In the same manner, the subject matter of independent claims 30 and 51 is disclosed in page 10, lines 27-32 and in page 19, lines 11-14. Since page 19, lines 11-14 indicates that the unwanted signal components are synthesized from Legendre polynomials of orders zero (0) to seven (7) (lower order polynomials), it is obvious that the wanted signal components will be represented by the other Legendre polynomials (higher order polynomials).

It is respectfully submitted that amended independent claims 1 and 21 are allowable at least for the reason that the references cited by the Examiner, taken separately or in combination, fail to teach about modeling a disturbance signal as polynomials of lower orders and removing the disturbance signal by removing the polynomials of lower orders from the contaminated EMG input signal to thereby obtain an EMG input signal substantially free from the disturbance signal.

The first reference, Lyon (US Patent No. 5,502,663), discloses a filter that may include different damping and frequency cut-off parameters. Polynomials are used to approximate the coefficients of the filter, for easier computation purposes. Therefore, Lyon fails to describe of suggest that a disturbance signal can be modeled as polynomials, more specifically lower-order polynomials, for removal from an EMG input signal.

The second reference, Kynor et al. (US Patent No. 5,603,321), discloses a method of removing background noise from cardiac signals by using times-series isoelectric artifacts. It is respectfully submitted that Kynor et al., fail to describe or suggest that a disturbance signal can be modeled as polynomials, more specifically lower-order polynomials, for removal from an EMG input signal.

The third reference, Arand et al. (US Patent No. 5,318,036), uses IIR filters to remove baseline wander from ECG signals. Although Arand et al., describes the use of the cubic spline method, in which the baseline wander is estimated with a third order polynomial and the estimate is subtracted from the ECG signal, Arand et al., still fails to describe or suggest modeling of a disturbance signal as polynomials of lower orders for removal from an EMG input signal.

The fourth reference, Levine (US Patent No. 5,579,243), discloses a filter synthesizer that generates orthogonal polynomial data from a cost function, corresponding to Forsythe polynomials. Although Levine discloses a method of generating polynomials, Levine fails to disclose modeling a disturbance signal as polynomials of lower orders for removal of this disturbance signal from an EMG input signal.

The fifth reference, Kouri et al. (US Patent No. 6,847,737), teaches about a method for padding, filtering, denoising and image enhancing digitized data. Their approach allows for generating a set of polynomials which are orthonormal. Classical polynomial systems such as Chebychev and Legendre are special cases of this approach. However, there is no disclosure of modeling a disturbance signals as polynomials, more specifically lower-order polynomials, for removal from an EMG input signal.

The sixth reference, Corless et al. (US Patent No. 6,988,116) describes a filtering method using cascades of first or second order filters, whose coefficients are calculated by using second order polynomials with respect to some characteristics corresponding to different cut-off frequencies. The polynomials are used to calculate the coefficients of the filter, they are not used to model a disturbance signal (with lower-order polynomials) for the purpose of removing this disturbance signal from an EMG signal.

In view of the above comments, it is respectfully submitted that none of the cited references, taken separately or in combination, discloses the subject matter of amended independent claims 1 and 21. Therefore, newly submitted independent claims 1 and 21 are believed to be allowable as well as the dependent claims directly or indirectly dependent thereon.

Concerning the amended independent claims 30 and 51, the same comments as above apply, since none of the cited references discloses modeling a disturbance-free EMG signal as polynomials, more specifically higher-order polynomials. More specifically, it is respectfully submitted that amended independent claims 30 and 51 are allowable as well as the dependent claims directly or indirectly dependent thereon, since none of the references cited by the Examiner, taken separately or in combination, teaches about modeling an EMG signal as polynomials of higher orders and outputting the polynomials of higher orders as an estimate of the EMG input signal substantially free from a disturbance signal.

Allowable subject matter

In the Office Action of April 11, 2006 claims 5, 6, 8, 9, 11-20, 22-29, 34, 35, 37, 38, 40, 44-50, 52-59, 62-68 and 71-76 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

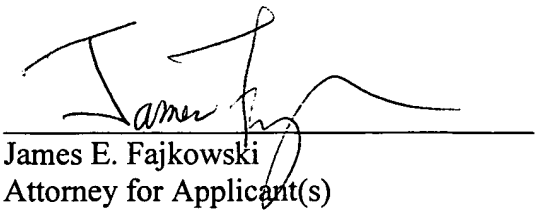
Accordingly, claims 5, 14, 20, 22, 34, 44, 45, 52, 63, 64, 72 and 73 have been drafted into independent form including substantially all the limitations of the base claims and any intervening claims, the subject matter of claim 62 has been introduced in claim 60 and the subject matter of claim 71 has been inserted in claim 69 to render these claims and the claims dependent thereon allowable.

CONCLUSION

In view of the foregoing arguments, Applicants respectfully request reconsideration, withdrawal of all grounds of rejection, and allowance of claims 1, 5-31, 34-40, 42-61, 63-70 and 72-85 in due course. The Examiner is invited to contact Applicants' undersigned representative by telephone at the number listed below to discuss any outstanding issues.

In light of the foregoing, we submit that all claims are now in condition for allowance.

Respectfully submitted,



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